

Reply dated April 12, 2005

Response to Office Action dated January 12, 2005

**REMARKS**

Favorable consideration and allowance are respectfully requested for claims 1-11 in view of the following remarks.

The rejection of claims 1-3 under 35 U.S.C. § 102(b) as anticipated by JP 63-270612 or RU 2073436 is respectfully traversed. The presently claimed invention relates to a homogeneous, boron-doped alkaline earth peroxide with a boron content of 0.5 to 5 weight percent and a peroxide content of about 75 weight percent or more, calculated based on the active oxygen content. The claims all require that the substance be homogeneous, meaning that it has a uniform structure or composition throughout. See, for instance the second definition of homogeneous provided in the Merriam-Webster's online dictionary, 10<sup>th</sup> Edition page attached hereto.

The English abstract of Japanese patent publication number 63-270612, published on November 8, 1988, describes a mixture of three components: (a) an alkaline earth peroxide; (b) magnesium sulfate; and (c) calcium hydroxide, calcium oxide or magnesium hydroxide. The abstract does not indicate that the mixture contains any boron compound. Further, there is no suggestion in the abstract that an alkaline earth peroxide might be doped with boron, much less doped with boron in a homogeneous composition. A peroxide doped with boron refers to a peroxide with boron within the peroxide crystal lattice. The reference

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does not provide such a teaching. Accordingly, the document fails to teach every element of the claimed invention.

Russian patent publication number 2073436 dated February 20, 1997, teaches a mix of 40-99.9% calcium peroxide and 0.1-60% boric acid which is added to water to provide for a prolonged storage of cut flowers. The Office Action indicates that the reference teaches copper peroxide in an amount of 40-99.9% (the abstract of the reference lists calcium peroxide) and boric acid of 0.2-60% by weight (the reference lists boric acid at 0.1-60 with no indication that this is a weight percent). In any event, the English abstract of the Russian reference fails to teach a composition that is doped with boron as is presently claimed.

A person of skill in the art would appreciate that a liquid mixture does not amount to a doped composition as is claimed. The Russian reference relates to a liquid mixture since it recites that the calcium peroxide and boric acid are added to water. The present claims are further distinguished from any liquid mixtures as the claim language recites that the composition is homogeneous meaning that the constituents are regularly distributed throughout the composition. In actual practice, the boron is installed within the crystal lattice of the alkaline earth peroxide. This is described in the specification, for instance, in examples 1-3 which describe a method of making the inventive composition wherein a suspension of calcium peroxide is provided with sodium metaborate in solution with aqueous hydrogen peroxide solution and the reaction product is then dried to arrive at a boron-doped calcium peroxide.

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The boron-doped peroxide of the present invention provides a bifunctionality that is not seen or suggested in the prior art. By doping, the oxygen release is regulated and, at the same time, a boron source is made available thereby rendering the need for any additional boron source in the material superfluous. The prior art simply fails to teach such a composition.

Accordingly, the reference fails to teach a homogenous, boron-doped composition as is presently claimed. Reconsideration and withdrawal of this rejection are respectfully requested.

The rejection of claims 1-3 and 8-11 under 35 U.S.C. § 102(b) as anticipated by GB 1580248 is respectfully traversed. Claims 1-3 are described above. Claims 8-11 are directed to a method of treating agricultural seed where the method comprises a step of applying a treatment composition comprising a homogeneous, boron-doped alkaline earth peroxide to the seed.

GB 1580248 teaches coating a seed with a mixture containing calcium peroxide to improve the cultivation performance of the seed. In addition to calcium peroxide, the coating mixture could contain other additives such as fertilizers, fungicides, insecticides, and herbicides. The additives may also include boric acid, borax, and sodium perborate.

First, there is nothing to suggest that the mixture created in the process of the GB 1580248 patent is homogeneous as is required in the claims. The exemplary method described on page 2 at lines 26-30 indicates that a granulator is fed with the seed, calcium peroxide, fillers, water and other additives and the

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seeds are then dried. There is no indication that the components of the coating are mixed before they are applied to the seeds. As a result, the total mixture would start out being far from homogeneous. During the process of granulation the various additives in the granulator would necessarily become increasingly mixed, so that they would become more homogenous. Accordingly, any composition which attaches to the seeds early in the process would be less homogeneous than composition attaching to the seeds later in the process. The result would be a coating on the seeds that is non-uniform and lacking homogeneity.

Further, claims 1-3 and 8-11 all recite a treatment composition comprising a homogenous boron-doped alkaline earth peroxide. The reference provides no indication that boron is doped in the composition. To the contrary it appears that the coating is provided as a non-uniform mixture of various components. Accordingly, the reference fails to teach each and every element of the claims invention. Reconsideration and withdrawal of this rejection are respectfully requested.

The rejection of claims 1-7 under 35 U.S.C. § 102(b) as anticipated by GB 1575792 is respectfully traversed.

Claims 1-3 are described above. Claims 4-7 relate to methods for producing a homogeneous boron-doped alkaline earth peroxide as is described in claim 1.

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GB 1575792 describes a method for increasing the stability of peroxide compounds by coating these compounds with a boron compound. See page 1, lines 85-89 of the reference. The reference describes that a preferred method of coating the particles is to spray an aqueous solution of a coating agent and then evaporate water. See page 2, lines 98-101. In particular, a solution of the boron compound is sprayed onto a peroxide particle in accordance with the teaching of the reference.

This is significantly different from the presently claim invention since it will not result in a boron-doped alkaline earth peroxide. Further, because the spraying process produces a change on only the surface of the particle, a homogenous composition is not formed. Accordingly, the reference fails to teach these elements of claims 1-3. In each of the methods of claims 4-7, a solution or suspension of an alkaline earth compound is reacted with a boron containing solution and water is then evaporated and the resulting solid is dried to obtain a homogenous, boron-doped peroxide product. The reference does not teach these steps as the reference is directed to a coating rather than forming a homogenous, boron-doped peroxide product. The reference teaches spraying a coating on the surface of a particle, not achieving a homogenous boron-doped alkaline earth peroxide. Accordingly, the reference fails to teach the homogenous boron-doped peroxide of the claims. Reconsideration and withdrawal of this rejection are respectfully requested.

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The rejection of claims 1-3 under 35 U.S.C. § 102(b) as anticipated by, or in the alternative under 35 U.S.C. § 103(a) as obvious over, JP 61-033104 is respectfully traversed.

Japanese patent publication number JP 61-033104 discloses a mixture in which a boron compound is blended with a peroxide to provide an algae-killing detergent. The abstract makes clear that the boron containing compound is a main component and is blended with a peroxide compound. In contrast, the boron content of the homogenous, boron-doped alkaline earth peroxide composition of the present invention is from 0.5-5 weight percent. This is not taught in the abstract of the reference which indicates that the boron compound is provided as the main component suggesting it is present in a majority or at least significantly greater amount than 5 weight percent. Moreover, the reference describes the detergent composition as a solution which is different than the present claims which relate to a boron-doped alkaline earth peroxide. As explained above, a doped compound is necessarily not a solution as the doped compound relates to a compound where the doping element is provided in the crystal lattice of the base material. Further, the claims require that the composition be homogeneous which excludes a mere mixture of solutions. Accordingly, the claims are neither anticipated by or obvious in view of JP 61-03314. Reconsideration and withdrawal of this rejection are respectfully requested.

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The rejection of claims 1-3 under 35 U.S.C. § 103(a) as obvious over Larson et al. (U.S. Patent No. 5,567,221) in view of “Essential Plant Nutrients” is respectfully traversed. The Office Action appears to cite the claims of the Larson reference. See page 4 of the recent Office Action. In Larson, claim 11 recites the use of an oxidant material including calcium peroxide in a fertilizer composition. Claim 12 recites using a boron compound as a micro nutrient material in a fertilizer composition. No single combination is provided of an alkaline earth peroxide with boron, much less a boron-doped alkaline earth peroxide or a homogeneous, boron-doped alkaline earth peroxide as is presently claimed. Larson generally discloses a product for controlled release of fertilizers. This product includes a core and a “released material” which envelops the core. The core material contains phosphorous, nitrogen and potassium compounds. The released material is responsible for the fact that the components of the core are slowly released to the surroundings. Larson discloses that a urea compound is preferably used as the release material. Oxidant materials such as calcium peroxide may be provided as well as micro nutrient materials such as boron. See column 4, lines 45-59.

There is no teaching or suggestion that a boron-doped calcium peroxide is used. Rather, the reference relates to a mere mixture of compounds. Accordingly, the reference fails to teach each and every element of the claimed invention.

The article entitled “Essential Plant Nutrients” is offered as teaching that boron is conventionally provided as a micro nutrient in an amount of up to above

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5%. Reviewing the reference, it appears that the amounts of boron to be provided are stated in terms of pounds of elemental boron per acre of crop being treated. Thus, there does not appear to be any disclosure or suggestion of a weight percent of boron to be provided, much less a weight percent that falls within the range recited in the claims. Further, this article fails to make up for the deficiencies of Larson to teach the claim elements of a homogenous, boron-doped alkaline earth peroxide. Accordingly, the cited combination fails to teach each and every element of the claimed invention, and the rejection cannot be properly maintained. Reconsideration and withdrawal of this rejection are respectfully requested.

The rejection of claims 1-7 under 35 U.S.C. § 103(a) as unpatentable over Doetsch et al. (U.S. Patent No. 6,193,776) or Farone et al. (U.S. Patent No. 5,395,419) in view of GB 1575792 is respectfully traversed.

Doetsch describes the suitability of homogeneous calcium/magnesium peroxides as oxygen sources and their use in the treatment of biomaterial. Farone teaches peroxides which are stabilized with phosphate ions. These peroxides may then be mixed with other additives to provide fertilizers to treat plant media. As admitted in the Office Action, neither of these references teach boron as is recited in the present claims. See page 5 of the recent Office Action. GB 1575792 is described above and although it discloses a peroxygenated compound coated with a solid coating of a boron compound, this does not amount

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to a boron-doped alkaline earth peroxide as is presently claimed, much less a homogeneous boron-doped alkaline earth peroxide.

As explained above, the boron-doped peroxide has boron in the crystal lattice of the peroxide. This is neither taught nor suggested by the reference.

Accordingly, the cited combination of references fails to teach or suggest each and every element of the claimed invention. Reconsideration and withdrawal of this rejection are respectfully requested.

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**CONCLUSION**

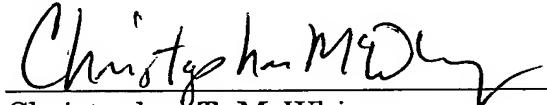
In view of the foregoing, the application is respectfully submitted to be in condition for allowance, and prompt favorable action thereon is earnestly solicited.

If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #038715.53046US).

Respectfully submitted,

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